SAF-RC-210
100-IU-2 & 100-IU-6 Miscellaneous Restoration Sites Near 100F - Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt

COMMENTS:

SDG J01528 **SAF-RC-210**

Sample Location: 600-320:6

Date: 18 April 2013
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Misc. Restoration Sites near 100F – Soil Full Protocol - Waste Site 600-320:6
Subject: Inorganics - Data Package No. J01528-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. J01528 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PP82	5/24/12	Soil	C	See note 1

1 - ICP metals (6010B) and mercury by 7471A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and

analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (60%) and silicon (27%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (18%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. J01528 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike recoveries outside QC limits, all antimony (60%) and silicon (27%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits, all silicon (18%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

INORGANICS DATA QUALIFICATION SUMMARY*

SDG: J01528	**REVIEWER: ELR**	**Project: 600-320:6**	**PAGE 1 OF 1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony Silicon	J	All	MS recovery
Silicon	J	All	LCS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Client Sample ID: J1PP82

Lab Sample ID: 280-29396-1
Client Matrix: Solid

% Moisture: 15.8

Date Sampled: 05/24/2012 1037
Date Received: 05/30/2012 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-123041	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-121992	Lab File ID:	26A060712.asc
Dilution:	1.0			Initial Weight/Volume:	1.02 g
Analysis Date:	06/07/2012 1441			Final Weight/Volume:	100 mL
Prep Date:	06/07/2012 0800				

4/12/13

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6630		1.8	5.8
Antimony		0.71	J	0.44	0.70
Arsenic		2.0	M	0.77	1.2
Barium		60.6		0.088	0.58
Beryllium		0.15	B	0.038	0.23
Boron		1.1	U	1.1	2.3
Cadmium		0.13	B	0.048	0.23
Calcium		5900		16.4	58.2
Chromium		9.9		0.068	0.23
Cobalt		7.8	X	0.12	1.2
Copper		17.0		0.25	1.2
Iron		20900		4.4	5.8
Lead		3.9		0.31	0.58
Magnesium		4870		4.3	23.3
Manganese		308		0.12	1.2
Molybdenum		0.34	B	0.30	2.3
Nickel		11.7	X	0.14	4.7
Potassium		880		47.7	349
Selenium		1.0	U	1.0	1.2
Silicon		398	J	6.6	11.6
Silver		0.19	U	0.19	0.23
Sodium		278		68.7	140
Vanadium		57.0		0.11	2.3
Zinc		41.5	X	0.46	1.2

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-123128	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-121837	Lab File ID:	120607aa3.txt
Dilution:	1.0			Initial Weight/Volume:	0.61 g
Analysis Date:	06/07/2012 1942			Final Weight/Volume:	50 mL
Prep Date:	06/07/2012 1125				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0065	U	0.0065	0.020

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-29396-1

SDG #: J01528
SAF#: RC-210

Date SDG Closed: May 30, 2012
Data Deliverable: 21 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1PP82	280-29396-1	6010B/7471/1311-6010-7470/WTPH-D+/8310	6010B/7471A/1311/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The sample was received on 5/30/2012 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.2° C and 5.4° C.

Sample J1PP82, requesting TCLP Metals 1311/6010B/7470A analysis, was leached and placed on hold, as instructed on the chain-of-custody. On 6/19/2012, the client instructed the laboratory to cancel the requested TCLP Metals 1311/6010B/7470A analysis.

GC SEMIVOLATILES - NWTPH-Dx - DRO
Low levels of C10-C36 and C10-C28 are present in the method blank associated with batch 280-122620. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1PP82 exhibited the surrogate recovery outside the control limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-121992 indicates that physical and chemical interferences are present for Cobalt, Nickel and Zinc. Results have been flagged with an "X".

Low levels of Nickel and Zinc are present in the method blank associated with batch 280-121992. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PP82; therefore, control limits are not applicable.

The duplicate analysis of sample J1PP82 exhibited RPD data outside the control limits for Arsenic, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

5.4,52 IAI sc 5/30

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-210-045	Page 1 of 1
Collector: MOORE, BR	Company Contact: Joan Kessner — Telephone No.: (509) 375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8C~~ 8D — Data Turnaround: ~~15 Days~~ 21 Days
Project Designation: 100-IU-2 & 100-IU-6 Miscellaneous Restoration Sites Near 1	Sampling Location: 600-320:6	SAF No.: RC-210	
Ice Chest No.: RCC-07-012	Field Logbook No.: EL-1651-03 — COA: 0603202000	Method of Shipment: FedEx	
Shipped To: TestAmerica Incorporated, Richland ~~Denver~~	Offsite Property No.: A110382	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	None	Cool 4C	Cool 4C							
Type of Container	G/P	G/P	G	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	120mL	120mL	120mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions	See item (2) in Special Instructions	TPH-Diesel Range - WTPH-D+	PAHs - 8310							
Sample No.	Matrix *	Sample Date	Sample Time								
J1PP82	SOIL	5/24/12	1037	X	X	X	X				

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CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Brandt Moore	5-24-12 1320	Don Heidelberg	5.24.12 1320
Don Heidelberg	5/24/12 1535	Greg Bingham	5-24-12 1535
Greg Bingham	5-29-12 0840	Fed EX	
			5/30/12 930

SPECIAL INSTRUCTIONS
Please leach and hold TCLP metals, per Joan Kessner

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) {Mercury}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

REVIEWED BY AT DATE 5-29-12

506
J01528

Matrix *: S=Soil, SD=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-32016			DATA PACKAGE: J01528		
VALIDATOR: RLR		LAB: TAL		DATE: 4/14/13	
			SDG: J01528		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J1PP82					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

no FB

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: LCS - silicon (182) - J all
MS - antimy (60%) silicon (27%) - J all

no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	Yes	No	N/A
Duplicate results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
Field duplicate RPD values acceptable?	Yes	No	N/A
Field split RPD values acceptable?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments:_____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Method Blank - Batch: 280-121992

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-121992/1-A	Analysis Batch:	280-123041	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-121992	Lab File ID:	26A060712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	06/07/2012 1437	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	06/07/2012 0800				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.076	U	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.1	U	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	3.8	U	3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.226	B	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.570	B	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Lab Control Sample - Batch: 280-121992

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-121992/2-A	Analysis Batch:	280-123041	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-121992	Lab File ID:	26A060712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	06/07/2012 1439	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	06/07/2012 0800				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	194.1	97	82 - 116	
Antimony	50.0	50.26	101	82 - 110	
Arsenic	100	102.2	102	85 - 110	
Barium	200	204.0	102	87 - 112	
Beryllium	5.00	4.89	98	84 - 114	
Boron	100	103.1	103	81 - 110	
Cadmium	10.0	10.69	107	87 - 110	
Calcium	5000	4965	99	82 - 114	
Chromium	20.0	20.89	104	84 - 114	
Cobalt	50.0	50.70	101	87 - 110	
Copper	25.0	25.52	102	88 - 110	
Iron	100	100.8	101	87 - 120	
Lead	50.0	50.99	102	86 - 110	
Magnesium	5000	4924	98	90 - 110	
Manganese	50.0	49.81	100	88 - 110	
Molybdenum	100	101.7	102	86 - 110	
Nickel	50.0	50.44	101	87 - 110	
Potassium	5000	4959	99	89 - 110	
Selenium	200	206.7	103	83 - 110	
Silicon	1000	177.2	18	10 - 70	
Silver	5.00	5.37	107	87 - 114	
Sodium	5000	5175	104	90 - 112	
Vanadium	50.0	52.54	105	88 - 110	
Zinc	50.0	49.70	99	76 - 114	

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Matrix Spike - Batch: 280-121992

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-29396-1	Analysis Batch:	280-123041	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-121992	Lab File ID:	26A060712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.01 g
Analysis Date:	06/07/2012 1446	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	06/07/2012 0800				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	6630		235	8960	989	50 - 200	4
Antimony	0.71		58.8	36.11	60	20 - 200	
Arsenic	2.0		118	112.3	94	76 - 111	
Barium	60.6		235	287.9	97	52 - 159	
Beryllium	0.15	B	5.88	5.46	90	72 - 105	
Boron	1.1	U	118	108.1	92	75 - 107	
Cadmium	0.13	B	11.8	11.65	98	40 - 130	
Calcium	5900		5880	12990	121	43 - 165	
Chromium	9.9		23.5	35.39	108	70 - 200	
Cobalt	7.8		58.8	61.81	92	72 - 106	
Copper	17.0		29.4	42.48	87	37 - 187	
Iron	20900		118	22930	1734	70 - 200	4
Lead	3.9		58.8	57.21	91	70 - 200	
Magnesium	4870		5880	11530	113	64 - 145	
Manganese	308		58.8	412.6	178	40 - 200	4
Molybdenum	0.34	B	118	106.5	90	75 - 103	
Nickel	11.7		58.8	67.43	95	61 - 126	
Potassium	880		5880	6514	96	56 - 172	
Selenium	1.0	U	235	221.0	94	76 - 104	
Silicon	398		1180	713.7	27	20 - 200	
Silver	0.19	U	5.88	5.85	100	75 - 141	
Sodium	278		5880	6024	98	78 - 111	
Vanadium	57.0		58.8	121.7	110	50 - 169	
Zinc	41.5		58.8	97.52	95	70 - 200	

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Duplicate - Batch: 280-121992

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-29396-1	Analysis Batch:	280-123041	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-121992	Lab File ID:	26A060712.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	06/07/2012 1449	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	06/07/2012 0800				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	6630		6395	4	40	
Antimony	0.71		0.43	NC	40	U
Arsenic	2.0		1.24	46	30	M
Barium	60.6		59.47	2	30	
Beryllium	0.15	B	0.158	4	30	B
Boron	1.1	U	1.1	NC	30	U
Cadmium	0.13	B	0.161	22	30	B
Calcium	5900		5930	0.5	30	
Chromium	9.9		9.01	10	40	
Cobalt	7.8		8.25	6	30	
Copper	17.0		14.64	15	30	
Iron	20900		22290	6	40	
Lead	3.9		4.84	21	40	
Magnesium	4870		4993	2	30	
Manganese	308		313.2	2	40	
Molybdenum	0.34	B	0.321	7	30	B
Nickel	11.7		14.26	20	30	
Potassium	880		810.2	8	40	
Selenium	1.0	U	0.98	NC	30	U
Silicon	398		444.7	11	40	
Silver	0.19	U	0.18	NC	30	U
Sodium	278		249.1	11	30	
Vanadium	57.0		54.45	5	30	
Zinc	41.5		42.66	3	40	

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Method Blank - Batch: 280-121837

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-121837/1-A	Analysis Batch:	280-123128	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-121837	Lab File ID:	120607aa3.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	06/07/2012 1937	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	06/07/2012 1125				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-121837

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-121837/2-A	Analysis Batch:	280-123128	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-121837	Lab File ID:	120607aa3.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	06/07/2012 1940	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	06/07/2012 1125				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.430	103	87 - 111	

Matrix Spike - Batch: 280-121837

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-29396-1	Analysis Batch:	280-123128	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-121837	Lab File ID:	120607aa3.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.53 g
Analysis Date:	06/07/2012 1951	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	06/07/2012 1125				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0065	U	0.560	0.564	101	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Duplicate - Batch: 280-121837

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-29396-1	Analysis Batch:	280-123128	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-121837	Lab File ID:	120607aa3.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.51 g
Analysis Date:	06/07/2012 1949	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	06/07/2012 1125				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0065	U	0.0077	NC	20	U

Date: 18 April 2013
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Misc. Restoration Sites near 100F – Soil Full Protocol - Waste Site 600-320:6
Subject: Polyaromatic Hydrocarbons - Data Package No. J01528-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. J01528 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PP82	5/24/12	Soil	C	See note 1

1 – Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of

compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.
All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. J01528 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: J01528	REVIEWER: ELR	Project: 600-320:6	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Client Sample ID: J1PP82

Lab Sample ID: 280-29396-1
Client Matrix: Solid

% Moisture: 15.8

Date Sampled: 05/24/2012 1037
Date Received: 05/30/2012 0930

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-122215	Initial Weight/Volume:	32.6 g
Dilution:	1.0			Final Weight/Volume:	4000 uL
Analysis Date:	06/06/2012 0828			Injection Volume:	20 uL
Prep Date:	06/01/2012 1811			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	110
Acenaphthylene		9.8	U	9.8	110
Anthracene		3.3	U	3.3	22
Benzo[a]anthracene		3.5	U	3.5	16
Benzo[a]pyrene		7.0	U	7.0	16
Benzo[b]fluoranthene		4.6	U	4.6	16
Benzo[g,h,i]perylene		7.9	U	7.9	33
Benzo[k]fluoranthene		4.3	U	4.3	16
Chrysene		5.3	U	5.3	44
Dibenzo(a,h)anthracene		12	U	12	33
Fluoranthene		14	U	14	44
Fluorene		5.8	U	5.8	33
Indeno[1,2,3-cd]pyrene		13	U	13	33
Naphthalene		13	U	13	110
Phenanthrene		13	U	13	44
Pyrene		13	U	13	44

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	85		72 - 115

4/12/13

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-29396-1

SDG #: J01528
SAF#: RC-210

Date SDG Closed: May 30, 2012
Data Deliverable: 21 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1PP82	280-29396-1	6010B/7471/1311-6010-7470/WTPH-D+/8310	6010B/7471A/1311/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The sample was received on 5/30/2012 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.2° C and 5.4° C.

Sample J1PP82, requesting TCLP Metals 1311/6010B/7470A analysis, was leached and placed on hold, as instructed on the chain-of-custody. On 6/19/2012, the client instructed the laboratory to cancel the requested TCLP Metals 1311/6010B/7470A analysis.

GC SEMIVOLATILES - NWTPH-Dx - DRO
Low levels of C10-C36 and C10-C28 are present in the method blank associated with batch 280-122620. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1PP82 exhibited the surrogate recovery outside the control limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-121992 indicates that physical and chemical interferences are present for Cobalt, Nickel and Zinc. Results have been flagged with an "X".

Low levels of Nickel and Zinc are present in the method blank associated with batch 280-121992. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PP82; therefore, control limits are not applicable.

The duplicate analysis of sample J1PP82 exhibited RPD data outside the control limits for Arsenic, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

5.4,52 IAI # 5130

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-210-045	Page 1 of 1
Collector MOORE, BR	Company Contact Joan Kessner	Telephone No. (509) 375-4688	Project Coordinator KESSNER, JH	Price Code 8D (JR 5/24/12)
Project Designation 100-IU-2 & 100-IU-6 Miscellaneous Restoration Sites Near 1	Sampling Location 600-320:6		SAF No. RC-210	Data Turnaround ~~15 Days~~ 21 Days (JR 5/24/12)
Ice Chest No. RCC-07-012	Field Logbook No. EL-1651-03	COA 0603202000	Method of Shipment FedEx	
Shipped To TestAmerica Incorporated, Richland (Denver)	Offsite Property No. A110382		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	None	Cool 4C	Cool 4C							
Type of Container	G/P	G/P	G	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	120mL	120mL	120mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	TPH-Diesel Range - WTPH-D +	PAHs - 8310							
Sample No.	Matrix *	Sample Date	Sample Time								
J1PP82	SOIL	5/24/12	1037	X	X	X	X				

Page 30 of 33

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Brandt Moore	5-24-12 1330	Don Heidelberg	5.24.12 1320
Don Heidelberg	5/24/12 1535	Bingham	5-24-12 1535
Bingham	5-29-12 0840	fed ex	
			5/30/12 930

SPECIAL INSTRUCTIONS
Please leach and hold TCLP metals, per Joan Kessner

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

REVIEWED BY AT DATE 5-29-12

506
J01528

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-320:6		DATA PACKAGE:	J01524	
VALIDATOR:	ELR	LAB:	TAL	DATE:	4/24/13
			SDG:	J01524	

ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:

J1PP82

soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PAS

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries aceptable? ..... Yes No N/A
Check materials traceable? ..... Yes No N/A
Check materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Method Blank - Batch: 280-122215

Method: 8310
Preparation: 3550C

Lab Sample ID:	MB 280-122215/1-A	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-122215	Lab File ID:	G0605044.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.9 g
Analysis Date:	06/06/2012 0727	Units:	ug/Kg	Final Weight/Volume:	4000 uL
Prep Date:	06/01/2012 1811			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.7	U	9.7	97
Acenaphthylene	8.7	U	8.7	97
Anthracene	3.0	U	3.0	19
Benzo[a]anthracene	3.1	U	3.1	15
Benzo[a]pyrene	6.2	U	6.2	15
Benzo[b]fluoranthene	4.1	U	4.1	15
Benzo[g,h,i]perylene	7.0	U	7.0	29
Benzo[k]fluoranthene	3.8	U	3.8	15
Chrysene	4.7	U	4.7	39
Dibenzo(a,h)anthracene	11	U	11	29
Fluoranthene	13	U	13	39
Fluorene	5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene	12	U	12	29
Naphthalene	12	U	12	97
Phenanthrene	12	U	12	39
Pyrene	12	U	12	39

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	83	72 - 115

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Lab Control Sample - Batch: 280-122215

Method: 8310
Preparation: 3550C

Lab Sample ID:	LCS 280-122215/2-A	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-122215	Lab File ID:	G0605045.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.1 g
Analysis Date:	06/06/2012 0758	Units:	ug/Kg	Final Weight/Volume:	4000 uL
Prep Date:	06/01/2012 1811			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1990	2060	103	78 - 116	
Acenaphthylene	1990	2000	100	76 - 115	
Anthracene	1990	2020	101	74 - 115	
Benzo[a]anthracene	1990	2140	107	85 - 120	
Benzo[a]pyrene	1990	1960	99	74 - 121	
Benzo[b]fluoranthene	1990	2170	109	85 - 115	
Benzo[g,h,i]perylene	1990	2130	107	85 - 120	
Benzo[k]fluoranthene	1990	2080	104	85 - 115	
Chrysene	1990	2110	106	83 - 115	
Dibenzo(a,h)anthracene	1990	2130	107	83 - 115	
Fluoranthene	1990	2130	107	83 - 115	
Fluorene	1990	2080	104	80 - 115	
Indeno[1,2,3-cd]pyrene	1990	2240	112	85 - 123	
Naphthalene	1990	2000	101	80 - 121	
Phenanthrene	1990	2080	104	80 - 115	
Pyrene	1990	2100	105	75 - 116	

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	90	72 - 115

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-122215

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-29396-1	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-122215	Lab File ID:	G0605047.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	06/06/2012 0859			Final Weight/Volume:	4000 uL
Prep Date:	06/01/2012 1811			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-29396-1	Analysis Batch:	280-122503	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-122215	Lab File ID:	G0605048.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.7 g
Analysis Date:	06/06/2012 0929			Final Weight/Volume:	4000 uL
Prep Date:	06/01/2012 1811			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	102	89	78 - 116	10	20		
Acenaphthylene	99	86	76 - 115	5	21		
Anthracene	98	86	74 - 115	4	20		
Benzo[a]anthracene	106	94	85 - 120	3	20		
Benzo[a]pyrene	101	89	74 - 121	3	20		
Benzo[b]fluoranthene	110	98	85 - 115	3	20		
Benzo[g,h,i]perylene	107	94	85 - 120	4	20		
Benzo[k]fluoranthene	107	95	85 - 115	3	20		
Chrysene	106	94	83 - 115	3	20		
Dibenzo(a,h)anthracene	108	95	83 - 115	3	20		
Fluoranthene	106	93	83 - 115	4	20		
Fluorene	102	90	80 - 115	4	20		
Indeno[1,2,3-cd]pyrene	112	99	85 - 123	3	20		
Naphthalene	99	85	80 - 121	6	20		
Phenanthrene	103	90	80 - 115	4	20		
Pyrene	104	92	75 - 116	4	20		

Surrogate	MS % Rec	MSD % Rec		Acceptance Limits
Terphenyl-d14 (SUR)	85	63	*	72 - 115

Date: 18 April 2013
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Misc. Restoration Sites near 100F – Soil Full Protocol - Waste Site 600-320:6
Subject: Diesel Range Organics - Data Package No. J01528-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. J01528 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PP82	5/24/12	Soil	C	See note 1

1 – Diesel range organics by NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all diesel range organic results were qualified as undetected, raised to the RQL and flagged "U".

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been

established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. J01528 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

Due to method blank contamination, all diesel range organic results were qualified as undetected, raised to the RQL and flagged "U".

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DIESEL RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: J01528	**REVIEWER: ELR**	**Project: 600-320:6**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	U at RQL	All	Method blank contmination

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Client Sample ID: **J1PP82**

Lab Sample ID: 280-29396-1
Client Matrix: Solid

% Moisture: 15.8

Date Sampled: 05/24/2012 1037
Date Received: 05/30/2012 0930

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-123804	Instrument ID:	GCS_U2
Prep Method:	3550C	Prep Batch:	280-122620	Lab File ID:	036F3601.D
Dilution:	1.0			Initial Weight/Volume:	30.3 g
Analysis Date:	06/08/2012 2216			Final Weight/Volume:	1000 uL
Prep Date:	06/05/2012 1825			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36	5000	~~3100~~ 4/12/13	~~J B~~ U	1200	4700
C10-C28	5000	~~2000~~	~~J B~~ U	800	4700

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	70		49 - 115

4/12/13

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-29396-1

SDG #: J01528
SAF#: RC-210

Date SDG Closed: May 30, 2012
Data Deliverable: 21 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1PP82	280-29396-1	6010B/7471/1311-6010-7470/WTPH-D+/8310	6010B/7471A/1311/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The sample was received on 5/30/2012 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.2° C and 5.4° C.

Sample J1PP82, requesting TCLP Metals 1311/6010B/7470A analysis, was leached and placed on hold, as instructed on the chain-of-custody. On 6/19/2012, the client instructed the laboratory to cancel the requested TCLP Metals 1311/6010B/7470A analysis.

GC SEMIVOLATILES - NWTPH-Dx - DRO
Low levels of C10-C36 and C10-C28 are present in the method blank associated with batch 280-122620. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs
The MSD aliquot of the MS/MSD performed on sample J1PP82 exhibited the surrogate recovery outside the control limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-121992 indicates that physical and chemical interferences are present for Cobalt, Nickel and Zinc. Results have been flagged with an "X".

Low levels of Nickel and Zinc are present in the method blank associated with batch 280-121992. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PP82; therefore, control limits are not applicable.

The duplicate analysis of sample J1PP82 exhibited RPD data outside the control limits for Arsenic, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

5.452 IA1 Sc 5130

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-210-045 | Page 1 of 1

Collector: MOORE, BR	Company Contact: Joan Kessner	Telephone No.: (509) 375-4688	Project Coordinator: KESSNER, JH
Price Code: ~~8C~~ 8D (JR 5/24/12)	Data Turnaround: ~~15 Days~~ 21 Days (JR 5/24/12)		
Project Designation: 100-IU-2 & 100-IU-6 Miscellaneous Restoration Sites Near 1	Sampling Location: 600-320:6	SAF No.: RC-210	
Ice Chest No.: RCC-07-012	Field Logbook No.: EL-1651-03	COA: 0603202000	Method of Shipment: FedEx
Shipped To: TestAmerica Incorporated, Richland (Denver)	Offsite Property No.: A110382		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
Cool 4C

SAMPLE ANALYSIS												
Preservation				Cool 4C	None	Cool 4C	Cool 4C					
Type of Container				G/P	G/P	G	aG					
No. of Container(s)				1	1	1	1					
Volume				60mL	120mL	120mL	120mL					
				See Item (1) in Special Instructions.	See Item (2) in Special Instructions.	TPH-Diesel Range - WTPH-D +	PAHs - 8310					
Sample No.	Matrix *	Sample Date	Sample Time									
J1PP82	SOIL	5/24/12	1037	X	X	X	X					

Page 3 of 53

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Brandt Moore	Date/Time: 5-24-12 1320	Received By/Stored In: Don Heidelberg	Date/Time: 1320 5-24-12
Relinquished By/Removed From: Don Heidelberg	Date/Time: 5/24/12 1535	Received By/Stored In: Bingham	Date/Time: 1060 5-24-12 1535
Relinquished By/Removed From: Bingham	Date/Time: 1060 5-29-12 0840	Received By/Stored In: fed ex	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time: 5/30/12 930
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS
Please leach and hold TCLP metals, per Joan Kessner

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}
(2) Metals by ICP (6010) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

REVIEWED BY AF DATE 5-29-12

506
J01528

Matrix *: S=Soil; SD=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-320:C			DATA PACKAGE: J01528		
VALIDATOR: ELK		LAB: TAL		DATE: 4/14/13	
			SDG: J01528		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1PP92					
				Soil	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: U at RQL - all

no FB

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PAS

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?	Yes	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments:_____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed?	Yes	No	N/A
Lot check performed?	Yes	No	N/A
Check recoveries aceptable?	Yes	No	N/A
Check materials traceable?	Yes	No	N/A
Check materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:_____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Method Blank - Batch: 280-122620

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-122620/1-A	Analysis Batch:	280-123804	Instrument ID:	GCS_U2
Client Matrix:	Solid	Prep Batch:	280-122620	Lab File ID:	034F3401.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.3 g
Analysis Date:	06/08/2012 2127	Units:	ug/Kg	Final Weight/Volume:	1000 uL
Prep Date:	06/05/2012 1825			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	1230	J	990	4000
C10-C28	920	J	670	4000

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	75	49 - 115

Lab Control Sample - Batch: 280-122620

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	LCS 280-122620/2-A	Analysis Batch:	280-123804	Instrument ID:	GCS_U2
Client Matrix:	Solid	Prep Batch:	280-122620	Lab File ID:	035F3501.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.6 g
Analysis Date:	06/08/2012 2152	Units:	ug/Kg	Final Weight/Volume:	1000 uL
Prep Date:	06/05/2012 1825			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
C10-C36	63300	49400	78	57 - 115	
C10-C28	63300	48900	77	53 - 115	

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	79	49 - 115

Client: Washington Closure Hanford

Job Number: 280-29396-1
Sdg Number: J01528

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-122620

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-29396-1	Analysis Batch:	280-123804	Instrument ID:	GCS_U2
Client Matrix:	Solid	Prep Batch:	280-122620	Lab File ID:	037F3701.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	06/08/2012 2240			Final Weight/Volume:	1000 uL
Prep Date:	06/05/2012 1825			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-29396-1	Analysis Batch:	280-123804	Instrument ID:	GCS_U2
Client Matrix:	Solid	Prep Batch:	280-122620	Lab File ID:	038F3801.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	06/08/2012 2304			Final Weight/Volume:	1000 uL
Prep Date:	06/05/2012 1825			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	88	84	57 - 115	4	23		
C10-C28	88	85	56 - 115	4	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	78	75	49 - 115